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## Algorithm for Solving the Symmetric Five-Diagonal Toeplitz Linear Equations \*

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### ABSTRACT

The symmetric five-diagonal Toeplitz system appears in many problems came from mathematics and applied science. In this paper, a method for solving the system is presented. The derivation of the result is principally based on a matrix split and a tridiagonal Toeplitz factorization of a symmetric five-diagonal Toeplitz matrix modified. The symmetric circulant five-diagonal Toeplitz system is also considered.

**Keywords:** The symmetric five-diagonal Toeplitz linear equation; Matrix split; Perturbation; Algorithm

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\* This work is supported by NSFC (60372012).